Barnard, and further in view of Inamiya Patent 5,160,935, claim 5 was rejected under 35 U.S.C. 103(a) on Brown et al. in view of Effland et al. Patent 5,008,679, and claims 9 and 10 were objected to as being dependent upon the rejected base claim but held allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Reconsideration and withdrawal of the rejections and objections are respectfully requested.

Claims 1-19 remain in the case.

Claim 13 has been amended to correct an obvious grammatical error.

The rejection of claim 1 under 35 U.S.C. 102(a) on Brown et al. is not well taken. This claim recites:

> "measuring data related to propagation time differences between signals transmitted from a plurality of satellites and received at said object to be tracked;
>
> transmitting said data to a central station... ".

Thus a very important distinction between applicants' invention and the Brown et al. patent is that signals transmitted from at least two different satellites are received at the object to be tracked, where data related to propagation time differences between those signals are measured and then transmitted to a central station. This is not true of Brown et al. who measure the time of transmission of signals from a satellite (col. 2, lines 17-21) and difference this measurement with the time of reception, as determined by the vehicle receiver's clock,

to determine the pseudo range between the receiver and the satellite being tracked (col. 2, lines 26-31). Thus Brown et al. must rely upon the vehicle receiver's clock in making range determinations, unlike applicants' system which bases its range determinations on signals from at least two satellites and consumes minimal power by virtue of not requiring usage of the receiver clock at the object to be tracked in making these determinations. In addition, errors of the type caused by receiver clock inaccuracies are avoided by applicants' measurement of time differences between a pair of satellite signals instead of between a single satellite signal and a receiver clock. Moreover, while Brown et al. make pseudo range and delta range or time difference and frequency difference measurements at the sensor, applicants do not measure ranges or time differences at the rail car receiver. Instead, most of the signal processing associated with determining the rail car location by use of applicants' invention is performed at the central station so that power consumption, which is a major concern on a rail car that may be parked on a siding for an extended period of time, is further minimized. The power required by Brown et al. in making the pseudo range and delta range or time difference and frequency difference measurements is therefore not needed at applicants' rail car receivers. Indeed, Brown et al. employ, at the sensor, a local oscillator and a temperature-compensated crystal oscillator to produce an intermediate frequency that is "far enough above DC to allow distinction between positive and negative Doppler shifts" (col. 2, lines 29-46) and thereupon also employ a custom gate array not only to perform the C/A code correlation but also to remove the L-band signal Doppler shift on the digital GPS signals. Here too, Brown et al. require a relatively large power

expenditure compared to that required by applicants. Clearly, therefore, claim 1 patentably distinguishes over Brown et al. under 35 U.S.C. 102(a).

Claim 2 is dependent from claim 1 and therefore distinguishes over Brown et al. as pointed out above. Barnard fails to remedy this deficiency of Brown et al. since Barnard fails to measure data related to propagation time differences between signals transmitted from a plurality of satellites and received at the object to be tracked. Therefore, even if Barnard includes, in the data transmitted from the object to be tracked, an identifying signal with the recorded satellite signals, and assuming, arguendo, that such information qualifies as part of the apparently undefined "status information" transmitted from the sensor to the VLS workstation by Brown et al., the combination nevertheless fails to teach or suggest the method of claim 2.

Claim 12, being an apparatus claim generally corresponding to method claims 1 and 2, is patentable over Brown et al. in combination with Barnard for the reasons set forth above in distinguishing claim 2 over Brown et al. and Barnard under 35 U.S.C. 103(a).

Claim 3, being dependent from claim 2, patentably distinguishes over Brown et al. and Barnard in the manner pointed out in the discussion of claim 2. Barnard, like Brown et al., fail to measure data related to propagation time differences between signals transmitted from a plurality of satellites and received at the object to be tracked. Moreover, the data related to propagation time differences recited by applicants in claim 3 comprises code word phase measurements simultaneously derived from the

signals transmitted from the plurality of satellites and received at the object to the tracked. It is these data, simultaneously derived from the plurality of satellites and received at the object to be tracked, that are transmitted by applicants to a central station and neither Brown et al. or Barnard appears to be concerned with transmitting such data to a central station.

Claim 6, being dependent from claim 1, patentably distinguishes over Brown et al. in the manner pointed out in the discussion of claim 1. Similarly, Bernard fails to measure data related to propagation time differences between signals transmitted form a plurality of satellites and received at the object to be tracked. Moreover, whether or not Brown et al. determine receiver code-time offsets and code periods, neither Brown et al. nor Barnard appear to teach or suggest transmitting such receiver code-time offsets and code periods to a central station.

Claim 11 patentably distinguishes over Brown et al. in the manner previously pointed out with regard to claim 1. In addition, Brown et al. neither teach nor suggest measuring data related to propagation time differences between signals transmitted from a plurality of satellites and received at the object to be tracked, and therefore claim 11 even further patentably distinguishes over any combination of Brown et al. and Barnard.

Claim 13, being dependent from claim 12, patentably distinguishes over Brown et al. and Barnard for the reasons said forth in discussing claim 12.

Claims 14 and 15 depend from claim 13 and therefore patentably distinguish over any combination of

Brown et al. and Barnard for the reasons set forth in discussing claim 13. Therefore, regardless of whether Barnard suggests that processing of the signal can be at predetermined intervals, and in addition to the fact that Barnard apparently says nothing about processing data at time intervals in synchronism with received signal events, these claims patentably distinguish over any combination of Brown et al. and Barnard for the reasons presented in the discussion of claim 13.

Claim 4 depends from claim 2 and therefore patentably distinguishes over any combination of Brown et al. and Barnard for reasons presented in discussing claim 2. Barnard and Janc et al. fail to measure data related to propagation time differences between signals transmitted from a plurality of satellites and received at the object to be tracked. Therefore, even if Janc et al. state that all known GPS receivers accomplish the measurement of bit timing, Janc et al. nevertheless fail to remedy the deficiencies of Brown et al. and Barnard pointed out in the discussion of claim 2, and therefore claim 4 patentably distinguishes over the combination of Brown et al., Barnard and Janc et al. for the same reasons. Moreover, the data related to propagation time differences recited by applicants in this claim comprises bit phase measurements simultaneously derived from the signals transmitted from the plurality of satellites and received at the object to be tracked. It is these data, simultaneously derived from the plurality of satellites and received at the object to be tracked, that are transmitted by applicants to a central station, and none of the Brown et al., Barnard, or Janc et al. patents appear to be concerned with transmitting such data to a central station.

Concerning claim 7, the deficiencies Brown et al., Barnard and Janc et al. as a combination of references applicable to claim 4 has been discussed above. Therefore, even if Barnard suggests that the combination include the steps of recording and transmitting the time of arrival signal with the satellite data to the central station, the combination would fail to render claim 7 obvious for the reasons presented in discussing claim 4.

Concerning claim 8, the deficiencies of Brown et al., Barnard and Janc et al. as a combination of references applicable to claim 4 has been discussed above. Therefore, even if Barnard suggests measuring, at the object to be tracked, delay between the time at which the data are recorded and the time when the data are transmitted to the central station, and transmitting the measured delay to the central station, the combination would still fail to render claim 8 obvious for the reasons set forth in the discussion of claim 4.

Claims 18 and 19 patentably distinguish over any combination of Brown et al. and Barnard for reasons pointed out in the discussion of claim 12, and the Janc et al. patent fails to remedy the deficiencies of Brown et al. and Barnard as references against claims 18 and 19. Moreover, even if Janc et al. teach that performance of receiver bit timing calculations is a common step during signal acquisition of GPS receivers, and that data bit timing derivation includes the bit phase measurement as well as the offset and period calculation, Janc et al., like Brown et al. and Barnard, fail to teach or suggest use of means for measuring data related to propagation time differences between signals transmitted from a plurality of satellites

and received at the object to be tracked. Clearly, therefore, applicants' system recited in claims 18 and 19 is unobvious over any combination of Brown et al., Barnard, and Janc et al. if indeed such combination could be operatively made.

Claim 16 patentably distinguishes over Brown et al. and Barnard in the manner discussed for claim 15. Inamiya, like Brown et al. and Barnard, fails to teach or suggest use of means for measuring data related to propagation time differences between signals transmitted from a plurality of satellites and received at the object to be tracked. Therefore, whether or not Inamiya suggests a method for positioning an observation point whereby each signal transmitted from the satellite includes a telemetry signal used in the calculation of the signal propagation delay, and whether or not the subject matter in columns 15 and 16 of Inamiya would have motivated one skilled in the art to combine the teachings of Inamiya with the system of Brown et al. and Barnard, the system of such combination would still suffer from the deficiencies pointed out in the discussion of claim 15 and therefore claim 16 would not be rendered obvious by the combination of Brown et al., Barnard and Inamiya.

Claim 17, which depends from claim 16, patentably distinguishes over any combination of Brown et al., Barnard and Inamiya for the same reasons set forth in the discussion of claim 16.

Claim 5, which depends from claim 1, patentably distinguishes over Brown et al. in the manner discussed with respect to claim 1. Effland et al., like Brown et al., fail to teach or suggest use of means for measuring

data related to propagation time differences between signals transmitted from a plurality of satellites and received at the object to be tracked. Therefore, whether or not Effland et al. disclose a method for locating a transmitter which includes the determination of an intersection of curves defined by the difference in propagation times of the signals, this teaching of Effland et al. would still fail to remedy the deficiencies of Brown et al. pointed out in the discussion of claim 1. Therefore, claim 5 patentably distinguishes over any combination of Brown et al. and Effland et al.

In accordance with the foregoing, it is clear that each of rejected claims 1-7 and 11-19 is patentable to applicants, and that claims 8 and 9 which have been objected to should be held patentable in their present form. Reconsideration and allowance of each of these claims are therefore earnestly solicited.

Respectfully submitted,

Marvin Snyder

Marvin Snyder
Attorney for Applicants
Reg. No. 20,126

Schenectady, New York

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Telephone: (518) 387-6189
or (518) 387-7122